Meet your Neighbours: Using camera traps to study spatial behaviour of rats in relation to leptospirosis risk in Brazilian favelas

More than one billion people worldwide currently live in urban slums with insufficient access to sanitation, education, and infrastructure. The poor and marginalized residents in such communities are at a disproportionate risk of many infectious diseases, some of which are zoonotic, i.e. diseases that circulate in vertebrate animals but may infect humans. In Brazil, at least 10 000 people are annually infected by leptospirosis, a bacterial disease carried by rats and transmitted to humans through contaminated soil or water (run-offs, sewage). Mortality rate is around 12%, and infection often causes considerable suffering.

The **one-year** master's project will be part of a multidisciplinary effort to enable local agencies and residents to control leptospirosis in **urban slums (*favelas*) of Salvador de Bahia, Brazil**. The project brings together **epidemiology, ecology, modelling, and social sciences** to evaluate how deprivation, access to infrastructure, and sanitation are related to different risk measures, such as rat abundance, environmental contamination, and infection prevalence in humans.

The master's student, via camera trapping, will investigate rat movement and behaviour within households in one slum community. Specifically, the project will tackle the following research questions: **How does rat behaviour vary with structural differences in households? What are the within and between household differences in contamination risk by rat urine? Consequently, what adjustments will be most effective in restricting rat movement and reducing bacterial hazard in the environment?**

The student will be supported by a skilled team from multiple institutes (Swedish University of Agricultural Sciences (SLU), Yale University, University of Liverpool, FIOCRUZ institute, and Federal University of Bahia). Some of the team members are among the most prominent in their field (epidemiology and ecology): Joris Cromsigt, Mike Begon, and Federico Costa. The onsite mentors will be Federico Costa and Hussein Khalil, and at SLU Tim Hofmeester and Joris Cromsigt.

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